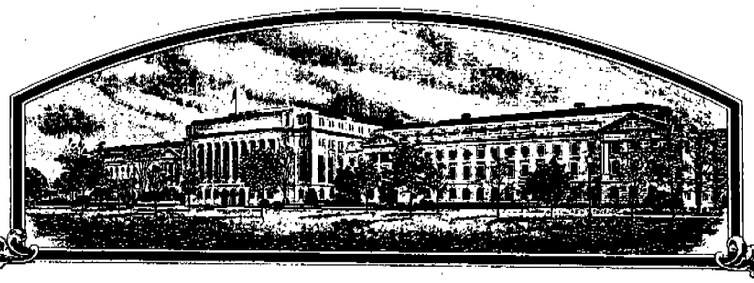

No. 7600002

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Purdue University Agricultural Experiment Station and A.R.S., U.S.D.A.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF seventeen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW,*[THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM,]TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS IFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

*[Waived]

BARLEY

'Pike'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 18th *day of* November *in the year of our Lord one thousand nine hundred and* seventy-six

Attest:

S. L. Rollin

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John A. Knebel

Acting Secretary of Agriculture

FORM GR-470
(2-12-71)

UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMER AND MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

FORM APPROVED
OMB NO. 40-R3712

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1. VARIETY NAME OR TEMPORARY DESIGNATION	2. KIND NAME	FOR OFFICIAL USE ONLY
Pike	Barley	PVPO NUMBER 7600002
3. GENUS AND SPECIES NAME	4. FAMILY NAME *(Botanical)*	FILING DATE 8/5/75 / TIME 2.00 P.M.
Hordeum vulgare	Gramineae	
	5. DATE OF DETERMINATION June 9, 1975	FEE RECEIVED $ 750 / CHARGES

6. NAME OF APPLICANT(S)	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*	8. TELEPHONE AREA CODE AND NUMBER
Purdue University Agricultural Experiment Station	Agricultural Experiment Station Purdue University West Lafayette, IN 47907	(317)-749-6004

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. STATE OF INCORPORATION	11. DATE OF INCORPORATION
Division of Land Grant University	Established by Federal Law Hatch Act, 1889	1889

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:

B.J. LISKA
~~Dr. H. H. Kramer~~, Director
Agricultural Experiment Station
Purdue University
7/15/76 West Lafayette, IN 47907

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [X] 12A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52, P.L. 91-577)*
- [X] 12B. Exhibit B, Botanical Description of the Variety
- [X] 12C. Exhibit C, Objective Description of the Variety
- [X] 12D. Exhibit D, Data Indicative of Novelty
- [X] 12E. Exhibit E, Statement of the Basis of Applicant's Ownership

The applicant declares that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable. *(See Section 52, P.L. 91-577).*

14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? *(See Section 83(a), P.L. 91-577) (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations?	14C. If "Yes," to 14B, how many generations of production beyond breeder seed?
[X] YES [ ] NO	Three

Applicant is informed that false representation herein can jeopardize protection and result in penalties.

The undersigned applicant(s) of this sexually-reproduced novel plant variety believes that the variety is distinct, uniform, and stable as required in Section 41 and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act (P.L. 91-577).

9 June 1975
(DATE)

H H Kramer
(SIGNATURE OF APPLICANT)

1

(DATE)

(SIGNATURE OF APPLICANT)

12A. Exhibit A. Origin and Breeding History of Pike Winter Barley.

Pike (CI 15621) Winter Barley was developed at the Purdue University Agricultural Experiment Station.

The parentage of Pike and the order of crossing is: Comfort/Purdue 21/2/Bolivia CI1257/Chevron CI1111/3/Kentucky No. 1/Indiana Beardless Winter 400-17/4/Wong.

Pike was an usual short early segregant in the genetic research of F. L. Patterson in which plants were maintained heterozygous for awned vs awnlessness through 8 generations of selfing beginning with F_1 in the development of an isogenic line series. In the ninth generation an awned plant was isolated which was increased. The breeder's seed in 1975 was in the 20th generation of selfing following the final cross.

Winter barley is recognized as being almost 100 percent self-pollinated. Pike has been uniform in general appearance in the development of breeder's seed by selfing in isolation from other barley.

Pike is earlier in maturity than other winter barley varieties adapted to Indiana making it desirable for barley-soybean double cropping in southern Indiana.

Pike has been evaluated for performance in drill plots in southern Indiana for 6 years, 1969-74 (Table 1). It has been grown in nursery plots at Lafayette, IN 1967-73, and in the regional Uniform Barley Winterhardiness Nursery in 1975.

7600002

12B. Exhibit B. Botanical Description of Pike Winter Barley.

Pike is a six-row, rough-awned winter variety with excellent winter-hardiness.

The coleoptile color is green. Young plants are intermediate in uprightness of growth and may show slight or no pigmentation. Leaves are a medium green in color.

Pike has averaged about 4 days earlier in heading than Paoli and 4 days earlier than Barsoy at Lafayette, IN. Flowering begins in about 226 days after September 25 seeding and continues for about 10 days at Lafayette, IN. It is recognized that temperature and day length differences may influence varieties differentially.

Pike has been the shortest variety in Indiana trials (Table 1) averaging about 76 cm which is 3 cm shorter than Paoli.

Pike has a snakey neck but much less extreme twisting than for Barsoy. The collar is generally closed but infrequently may be V-shaped or open. The basal rachis internode is short and usually 3 to 4 mm long in contrast to the very short 1-2 mm length for Paoli. The spike is dense and averages about 5 cm long. The spike generally exerts 10-12 cm above the flag leaf. Lemma awns are long (about 8-9 cm) and rough but shorter than those of Paoli (9-10 cm). The rachis is tough with a moderate number of marginal hairs. The spike is parallel in shape, dense, and generally erect to inclined at maturity. Tweaking is absent.

Outer glumes are about two thirds the length of the kernels. Glume awns are somewhat longer than the glumes and are rough. Glumes have long hairs generally in a broad band but may occur on much of the glume.

Anthers are yellow. The stigma is very hairy.

The kernels are covered, average about 7.5 to 9 mm long, and weigh about 28 to 32 g per 1000. Aleurone color appears colorless at Lafayette, IN. Rachilla hairs are generally long but rachillas are infrequently aborted. Lemmas are semiwrinkled to slightly wrinkled, with few teeth. Lemma base is generally depressed.

Straw strength of Pike is good and similar to Paoli but not equal to Harrison.

Pike is considered a feed barley. Kernel size is too small and ununiform for consideration for malting.

Disease observations have been under natural epidemics at Lafayette, IN. Loose smut has occurred in Pike indicating that it is susceptible to some races occurring in Indiana. Pike is susceptible to Rhynchosporium scald.

FORM APPROVED. O

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

OBJECTIVE DESCRIPTION OF VARIETY
BARLEY (HORDEUM VULGARE)

S... reverse.

NAME OF APPLICANT(S)

Purdue University Agricultural Experiment Station

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

West Lafayette, IN 47907

FOR OFFICIAL USE ONLY
NUMBER 7600002

VARIETY NAME OR TEMP DESIGNATION: Pike (CI 15621)

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (i.e. 0 8 9 or 0 9) when number is either 99 or less or 9 or less.

1. GROWTH HABIT:

[3] 1 = SPRING 2 = FACULTATIVE WINTER 3 = WINTER

[2] Early Growth: 1 = PROSTRATE 2 = SEMIPROSTRATE 3 = ERECT

2. MATURITY (50% Flowering):

[4] 1 = EARLY (California Mariout) 2 = MIDSEASON (Betzes) 3 = LATE (Frontier) 4=Early Winter (Paoli)

[4] No. of days Earlier than ... [8]

[ ] No. of days Later than ...... [ ]

1 = BETZES 2 = CALIFORNIA MARIOUT 3 = CONQUEST 4 = ... 5 = PIROLINE 6 = PRIMUS 7 = UNITAN 8=Paoli Winter

3. PLANT HEIGHT (From soil level to top of head):

[5] 1 = ... DWARF 2 = SHORT (California Mariout) 3 = MEDIUM (Betzes) 4 = TALL (Conquest) 5=Short Winter (Paoli)

[0 3] Cm. Shorter than ..... [ ]

[ ] Cm. Taller than ...... [ ]

1 = BETZES 2 = CALIFORNIA MARIOUT 3 = CONQUEST 4 = ...SON 5 = PIROLINE 6 = PRIMUS 7 = UNITAN 8=Paoli

4. STEM:

[3] Exsertion (Flag ... at maturity): 1 = 0 - 3 cm. 2 = 3 - 10 cm. 3 = 10 - 15 cm.

[2] Anthocyanin: 1 = ABSENT 2 = PRESENT

[0 4] NODES (Originating from node above ground)

[4] ...oliar Shape: 1 = CLOSED 2 = V-SHAPED 3 = OPEN 4 = MODIFIED CLOSED OR OPEN

[2] Shape ...: 1 = STRAIGHT 2 = SNAKY ... = OTHER (Specify)

5. LEAF:

[1] Basal ... sheath ...: 1 = GLABROUS 2 = PUBESCENT

[2] Position of flag leaf (at boot ...): 1 = DROOPING 2 = UPRIGHT

[2] Waxiness: 1 = ABSENT (Glossy) 2 = SLIGHTLY WAXY 3 = WAXY

[1 5] MM. WIDTH (First leaf below flag leaf)

[1 8] CM. LENGTH (First leaf below flag leaf)

[1] An... sheath: 1 = ABSENT 2 = PRESENT

6. HEAD:

[2] Type: 1 = TWO-ROWED 2 = SIX-ROWED

[3] ... = ERECT (Not dense) ... = ERECT ...

[2] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify)

[2] Waxiness: 1 = ABSENT (Glossy) 2 = SLIGHTLY WAXY 3 = WAXY

[3] ... overlap: 1 = NONE 2 = AT TIP 3 = 1/4 - 1/2 OF HEAD

[2] Rachis (Hair on edge): 1 = LACKING 2 = FEW ... COVERED

7. ...

[3] Length: ... OF LEMMA 2 = 1/2 ... LEMMA ... MORE THAN 1/2 OF LEMMA

[3] ...: ... = NONE ... SHORT ... = LONG

3 Hair covering: ... NONE 2 = RESTRICTED TO MIDDLE 3 = CONFINED TO BAND 4 = COMPLETELY COVERED

[3] Awn... = LESS THAN EQUAL TO LENGTH OF GLUMES 2 = EQUAL TO LENGTH OF GLUMES 3 = MORE THAN EQUAL TO LENGTH OF GLUMES

[3] Awn Surface: 1 = SMOOTH 2 = SEMISMOOTH 3 = ROUGH

FORM GR-470-5 (Reverse) 7600002

8. LEMMA:

[5] Awn: 1 = AWNLESS 2 = AWNLETS ON CENTRAL ROWS, AWNLESS ON LATERAL ROWS 3 = SHORT ON CENTRAL ROWS, AWNLETS ON LATERAL ROWS 4 = SHORT (less than equal to length of spike) 5 = LONG (longer than spike) 6 = HOODED

[3] Awn Surface: 0 = AWNLESS 1 = SMOOTH 2 = SEMISMOOTH 3 = ROUGH

[2] Teeth: 1 = ABSENT 2 = FEW 3 = NUMEROUS

[1] Hair: 1 = ABSENT 2 = PRESENT

[1] Shape of base: 1 = DEPRESSION 2 = SLIGHT CREASE 3 = TRANSVERSE CREASE

[2] Rachilla Hairs: 1 = SHORT 2 = LONG

9. STIGMA:

[2] Hairs: 1 = FEW 2 = MANY

10. SEED:

[2] Type: 1 = NAKED 2 = COVERED

[1] Hairs on Ventral Furrow: 1 = ABSENT 2 = PRESENT

[2] Length: 1 = SHORT (8.0 mm.) 2 = SHORT TO MIDLONG (7.5 - 9.0 mm.) 3 = MIDLONG (8.5 - 9.5 mm.) 4 = MIDLONG TO LONG (9.0 - 10.5 mm.) 5 = LONG (10.0 mm.)

[3] Wrinkling of hull: 1 = NAKED 2 = SLIGHTLY WRINKLED 3 = SEMIWRINKLED 4 = WRINKLED

[1] Aleurone Color: 1 = COLORLESS (White or Yellow) 2 = BLUE

[0][0] PERCENT ABORTIVE

[3][0] GMS. PER 1000 SEEDS

11. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SEPTORIA	[0] NET BLOTCH	[0] SPOT BLOTCH	[0] POWDERY MILDEW
[1] LOOSE SMUT	[0] BACTERIAL BLIGHT	[1] COVERED SMUT	[0] FALSE LOOSE SMUT
[1] STEM RUST	[2] LEAF RUST	[1] SCAB	[1] SCALD
[0] BYDV	[0] BSMV	[1] BYDV	[ ] OTHER (Specify)

12. INSECT: (0 = Not tested, 1 = Susceptible 2 = Resistant)

[0] GREEN BUG	[0] ENGLISH GRAIN APHID	[0] CHINCH BUG	[ ] ARMYWORM
[0] GRASS HOPPERS	[1] CERIAL LEAF BETTLE	[ ] OTHER (Specify) _____	

HESSIAN FLY RACES: [ ] GP [ ] A [1] B [ ] C [ ] D [ ] E [ ] F [ ] G

13. CHEMICAL (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] DDT [ ] OTHER (Specify) _____

14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Paoli	Seed size	Harrison
Leaf size	"	Coleoptile elongation	"
Leaf color	"	Seedling pigmentation	
Leaf carriage	"		

REFERENCES: The following publications may be used as a reference aid for the standardization of character descriptions and terms used in this form:

1. Wiebe, G. A., and D. A. Reid, 1961, Classification of Barley Varieties Grown in the United States and Canada in 1958, Technical Bulletin No. 1224, U.S. Dept. of Agriculture.
2. Reid, D. A., and G. A. Wiebe, 1968, Barley: Origin, Botany, Culture, Winter Hardiness, Genetics, Utilization, Pests, Agriculture Handbook No. 338, U.S. Dept. of Agriculture. pp. 61 - 84.
3. Malting Barley Improvement Association, Milwaukee, Wisconsin, 1971, Barley Variety Dictionary.

COLOR: Nickerson's or any recognized color fan may be used to determine color of the described variety.

Barley Application No. 7600002, Pike

12D. Revised Exhibit D. Data Indicative of Novelty.

Pike has some characteristics like Paoli, Harrison, and Barsoy but is distinct from these.

Pike was derived from the same F_3 plant has Harrison. Pike is about 23 cm shorter and averages 6 days earlier in maturity than Harrison (Table 1). Pike is susceptible to scald whereas Harrison is resistant (Table 2).

Pike and Paoli are related in parentage, and are of similar height and both are early. Pike has averaged 4 days earlier in heading than Paoli. Pike has a moderately snakey neck whereas the neck of Paoli is straight. Paoli is resistant to scald and loose smut whereas Pike is susceptible.

Pike and Barsoy are both short early barleys. Pike has a moderately snakey neck whereas Barsoy has extremely curved necks. Pike has averaged about 4 days earlier than Paoli.

Barsoy has been described by Finkner, Tutt, and Coffman, "Registration of Barsoy barley." Crop Sci. 8:397, 1968. Among other distinctive characters are long rachilla hairs for Pike and short for Barsoy.

Pike is most similar to Paoli.

7600002

Table 1. Performance of winter barleys in southern Indiana field plots, 6-year av., 1969-1974.*

Variety	Acre yield	Test weight	Lodging	Plant ht	Winter killing
	bu/a	lb/bu	%	in.	%
Lakeland	88.5	40.1	14	38	7
Harrison	81.3	40.0	9	39	7
Knob	84.1	37.1	17	33	7
Pike	80.5	39.9	19	30	7
Paoli	77.9	40.5	25	31	7
Barsoy	75.5	38.6	21	31	5
Jefferson	66.7	36.5	2	40	5

* Research of K. M. Day. Annual data on named varieties are published in Purdue Res. Bul. 856, 883, and 896 and Purdue Sta. Bul. 32 and 56.

Table 2. Comparison of winter barley varieties for reaction to diseases and for heading at Lafayette, IN.

Variety	Rhynchosporium scald	Leaf rust[1]		Loose smut	Days later than Pike
		1969	1972		
Pike	S	5R	10MS	S	0
Paoli	R	5MR	80S	R	4
Harrison	R	0I	40S	S	6
Barsoy	-	50S	80S	S	4

[1] At Lafayette, IN, natural epidemics.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
14th and Independence Avenue, Rm. 1634

WASHINGTON, D.C. 20250

PLANT VARIETY PROTECTION OFFICE

Gentlemen:

Subject: Application No. 7600002
Variety and Kind - 'Pike' - - Barley

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificate on the above variety be issued with a notation on each Certificate that the right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety covered by this Certificate, or using it in producing a hybrid or different variety is waived. *

It has been agreed that the certificate should be issued in the name(s) of:

The Purdue University Agricultural Experiment Station and ARS-USDA

6/8/76
(Date)

B J Liska - Director
(Signature)

*except that this waiver shall not apply to (a) breeder seed, (b) foundation seed, (c) labeling requirements, and (d) blending limitations. BJL

REVISED EXHIBIT E: STATEMENT OF THE BASIS OF APPLICANT'S OWNERSHIP

Purdue University Agricultural Experiment Station and the Agricultural Research Service, United States Department of Agriculture, are joint owners of 'Pike' barley.

9/15/76
Date

B. J. Liska, Director
Purdue University Agricultural Experiment Station